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Impact of Government Policies and Downstream Activities on Cashew Farming in Central Buton Regency

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This study aims to analyze the influence of government policies and downstream activities on cashew farming practices in Central Buton Regency. The research population included all cashew farmers in the Central Buton Regency area totalling 747 people. Determination of the number of samples was carried out using the Slovin formula with an error tolerance limit of 5% so that the number of research samples was 260 people. Respondents were determined by the purposive sampling method. The exogenous variables of this study are government policies and downstream activities (processing and marketing), while the endogenous variable is cashew farming activities. Data was collected using a questionnaire and then will be analyzed quantitatively in accordance with the objectives formulated in the study. The tabulated results of the Likert scale were analyzed using SEM PLS analysis with the help of SmartPLS software version 3.0. The results showed that cashew farming activities were positively and significantly influenced by government policies by 21.4%, and downstream activities (processing and marketing) by 68%. Then cashew farming activities are influenced by government policies through downstream activities by 0.660 or 66%. Increasing government policy support and updating the handling of downstream activities will have a positive and significant impact on cashew farming activities. government policies and downstream activities are important factors in increasing cashew farming activities in Central Buton Regency.

Keywords: Agricultural development, nuts production, government policy, economic development, farmers income, farm productivity, agribusiness.

INTRODUCTION

The entire national economy of Indonesia still comes from agriculture, so this sector still plays an important role in the lives of Indonesian people. This is evident from the large number of people or laborers who work and depend on the agricultural sector (Lyson, 2004). Agriculture has a major contribution to the process of economic development. According to Khan et al. (2020) and Xuezhen et al. (2010), the contribution of agriculture to a country's economic development includes production contribution, market contribution, contribution of production factors, and foreign exchange contribution.. In long-term economic development and short-term economic recovery, the agricultural sector is very important (Beckman & Countryman, 2021). The role of the agricultural sector is as a source of producing basic needs including staple food, clothing and shelter, providing employment for most of the population, providing foreign exchange for the country, large contribution to national income, and reducing dependence on imported products.

Therefore, now is the most appropriate momentum to explore ideas regarding the reorientation of agricultural development policies. Agricultural development policies that focus on building a resilient agricultural sector in the face of economic crisis with sustainable agricultural systems (Buitenhuis et al., 2020; Movilla-Pateiro et al., 2021). An agricultural economic system that is democratic and under decentralized governance. Plantation as a sub-sector of agriculture, especially cashew farming, its role in the economic sector can be one of the sources of regional income. (Nisa & Ridho, 2024; Aulia et al., 2023). In a decentralized region, the government continues to strive to be able to create income in order to finance its own territory. Cashew (*Anacardium occindentale*) is one of the leading plantation commodities in Southeast Sulawesi. Good cashew management can contribute to foreign exchange, a source of income for

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farmers, increase raw materials for the food industry, labor absorption and encourage growth in new economic centers in the development area (Olukunle, 2022) as in the Central Buton Regency (Buteng) area. In addition, cashew is also a prima donna species for conservation and rehabilitation of critical and marginal lands such as rocky land (karts area) in the Central Buton Regency area. Central Buton district of Southeast Sulawesi has the largest cashew plantation area in Indonesia. In 2019 Central Buton Regency had an area of 13,208 hectares, production of 2,572 tons and productivity of 0.19 tons/hectare. In 2020 Central Buton Regency saw an increase in area to 13,404 hectares, production fell to 2,125 tons and productivity fell to 0.16 tons/hectare (Central Bureau Statistics of Southeast Sulawesi, 2021). Southeast Sulawesi Province (Sultra) is an area that has the largest cashew cultivation area in Indonesia. However, cashew productivity in Southeast Sulawesi continues to decline from year to year (Boer et al., 2021; Zarliani et al., 2021). This phenomenon is also thought to occur in cashew production centers, for example in Central Buton District. Many factors contribute to cashew farming productivity in Indonesia and especially in Southeast Sulawesi. Some factors that contribute to cashew farming productivity are government policies (Olubode et al., 2018; Oluyole et al., 2017) and downstream activities (processing and marketing) (Bello et al., 2017; Bassett et al., 2018). These factors are interconnected, so cashew management must be studied holistically as a whole system rather than partially. The influence of these various factors differs between cashew development areas. In general, production factors that affect farm productivity cannot be separated from one another. But it must be seen starting from the provision of inputs, cultivation to output (Van der Ploeg, 2019; Fuglie, 2015). This is in line with the mission of the Central Buton region as stated in the vision contained in the Regional Long-Term Development Plan is "The realization of Central Buton Regency as a Center for Agribusiness Development based on Faith and Taqwa". The word Agribusiness is defined as a concentration of regional economic activities in accordance with their potential, as a center for agribusiness development which includes cultivation, processing and marketing activities, especially for agriculture (cashew). The economic activities of this district will concentrate on the development of added value that can be generated to increase the overall income of the community. Included in these agribusiness activities are micro, small and medium enterprises (MSMEs) in various forms which are the strength of the people's economy facing competition with large businesses, by involving the role of women as much as possible.

Central Buton Regency is known as a cashew producing area. This is in accordance with the government program that makes cashews a priority crop and as a regional icon. Cashew trees in Central Buton. The average age of cashew trees/stands in Central Buton is old (> 25-30 years). Thus, production tends to decrease with tree age (low productivity) (Monteiro et al., 2017), accompanied by low cashew cultivation practices by farmers. This is in line with the statement that cashew plants depend on the age of planting. Cashews aged 3-4 years can produce 2-3 kg of dry logs/trees. This yield increases to 15-20 kg/tree at the age of 20-30 years. Cashew plants can still produce up to the age of 50 years, but the most productive period is at the age of 25-30 years (Tola and Mazengia, 2019). This situation should be addressed by government programs such as the distribution of superior and quality cashew seeds to encourage production growth and improve the sustainability of the farm.

Cashews in Central Buton Regency are in the unproductive age range. In addition, cashew production is also strongly influenced by production factors. When juxtaposed with the phenomenon in the field that cashew in Central Buton District does not provide the expected (optimal) production due to various factors that influence it. These factors include weather, soil conditions, cultivation, government policies, downstream activities and other factors. The reality on the ground is that this crop is far from what farmers expect. However, farmers still maintain their crops. Farmers hope for optimal production of this crop. The government has made many efforts to increase production. For example, through extension workers provide education by organizing rejuvenation. However, these efforts were not heeded by cashew farmers. But they still maintain their cashew plants to continue to be cultivated. This shows the desire of farmers to continue to strive to maintain and increase the production of their cashew trees. Based on the phenomenon in the field by seeing that the community's interest in continuing to carry out cashew farming with various cultivation problems that face it, this study aims to examine the effect of government policies and downstream activities on cashew farming activities in Central Buton Regency.

MATERIALS AND METHODS

This research was conducted in Central Buton Regency in 2024. The research population includes all cashew farmers in the Central Buton Regency area totaling 747 people. Determination of the number of samples was carried out using the Slovin formula with an error tolerance limit of 5%, so that the number of samples was 260 farmers. Respondents were determined by non-probability sampling methods, especially purposive sampling (Vehovar et al., 2016). The purposive sampling method was chosen because not all cashew farmers in Central Buton Regency carry out cashew processing activities, only most farmers carry out processing activities before being sold.

The research data was collected through the interview method using a questionnaire (list of questions), and literature studies from various sources to complement the data in the study. In answering each question on the questionnaire will be based

on a Likert scale. Where respondents will be asked to answer by giving a score value from 1 to 5. These five categories mean, namely Very High (5), High (4), Medium (3), Low (2), and Very Low (1). The variables of this study consist of government policies (X1) which include X1.1) cashew farming receives support from the government; (X1.2) the local government has programs related to cashew farming; (X1.3) the government provides subsidies for cashew farming; (X1. 4) the intensity of visits by Field Agricultural Extension Workers (PPL) to accompany farmers; (X1.5) the presence of stakeholders in the field to support cashew farming activities; (X1.6) the availability of a budget from the government for cashew farming; and (X1.7) the availability of credit facilities for cashew farmers. The downstream activity variable (X2) is closely related to cashew processing and marketing which includes (X2.1) availability of processing facilities; (X2.2) availability of raw material sources; (X2.3) conducting cashew processing; (X2.4) availability of local packaging technology; (X2.5) collaborating with other business actors; and (X2.6) selling directly to intermediary traders. Cashew farming activities variables (Y) which include (Y1) cashew plants come from local seedlings; (Y2) cashew plants come from local seedlings; (Y3) the types of varieties used are sourced from random seedlings; (Y4) the age of cashews cultivated has been more than 20 years; (Y5) knowing the economic age of cashew plants; (Y6) knowing that plant age affects cashew production; (Y7) the intensity of fertilizer use in cashew farming activities; (Y8) knowing the use and benefits of fertilizers on cashew trees; (Y9) cashew trees need pruning; (Y10) knowing the benefits of pruning on cashew trees; (Y11) the use of labor outside family members; and (Y12) the use of labor sourced from family members. The data that has been collected using a questionnaire will then be analyzed quantitatively in accordance with the objectives formulated in the study. The tabulated results of the Likert scale were analyzed using SEM PLS analysis. The first order factor reflective approach is used to measure latent variables in this study, with reference to the Partial Least Square (PLS) method. According to Benitez et al. (2020) and Rose et al. (2023), the reflective model assumes that constructs or latent variables affect indicators so that confirmation of the relationship between latent variables is needed. PLS-SEM analysis includes outer model (measurement model) and inner model (structural model) (Wang, 2019). Then finally, conduct hypothesis testing. The research hypotheses proposed, namely (1) cashew farming activities are partially influenced (respectively) by government policies and downstream activities; (2) cashew farming activities are influenced by government policies through downstream activities.

RESULTS AND DISCUSSION

***Government policy*:** Government policy is a series of actions taken by the government to solve public problems and achieve certain goals. Government policies can be aimed directly or indirectly at the public (Quick & Bryson, 2022). Government policies in agriculture generally play a role in helping to increase production which has an impact on the welfare of farmers and the achievement of national food security (Cole et al., 2018). The local government of Central Buton Regency has a policy that supports the cashew farming development program and makes cashew as one of the iconic of the region. Government policies in cashew farming activities include local government policy support, coaching and financing. The three dimensions of government policy are broken down into seven indicators that measure government policy in supporting cashew farming activities in Central Buton Regency. The seven indicators, namely cashew farming received support from the government, the local government has programs related to cashew farming, the government provides subsidies to cashew farming, the intensity of visits by Field Agricultural Extension Workers (PPL) accompanying farmers, the presence of stakeholders in the field to support cashew farming activities, the availability of a budget from the government for the development of cashew farming, and the availability of credit facilities for cashew farmers. The government policies in supporting cashew farming activities in Central Buton District are presented in Table 1. It is clear from Table 1 that government policies in supporting cashew farming activities in Central Buton Regency are included in the medium category. This means that the government has contributed quite well to support the development of cashew farming, although the contribution has not been maximized. Government policy as a role that cannot be separated from the status and position of a person or institution. In relation to regional autonomy, the concept of role refers to the position and functions of the government as a facilitator in the area it leads (Nalbandian, 2015). The role of the government is deemed necessary to encourage and empower businesses in agriculture, the government facilitates ease in the field of financing, reduction of fiscal burden, ease of export, prioritizing the use of domestic production, regulating the entry and exit of agricultural products, facilitating accessibility of science and technology and information, encouraging the formation of agricultural association groups and commodity boards based on the type of crop cultivated.

Table 1. Government policies in support of cashew farming activities.

No.	Indicator	Value	Category
1	Cashew farming receives support from local government	4,14	High
2	The local government has programs related to cashew farming	3,65	Moderate

3	The government subsidizes cashew farming	3,21	Moderate
4	Intensity of visits by Field Agricultural Extension Workers (PPL) to accompany farmers	4,28	High
5	Stakeholder presence in the field to support cashew farming activities	3,36	Moderate
6	Availability of government budget for cashew farming development	3,64	Moderate
7	Availability of credit facilities for cashew farmers	3,51	Moderate
Average		3,68	Moderate

Source: Processed Primary Data, 2024.

***Downstream activities*:** Downstream activities in farming refer to a series of activities that occur after the production or harvest phase of farming. It involves a series of post-harvest activities ranging from processing, distribution, marketing, and consumption of agricultural products. According to Sexton & Xia (2018), downstream activities focus on how agricultural products are prepared, processed, and sold to final consumers. Downstream activities are seen as part of agribusiness activities that involve the storage, processing and distribution of agricultural products; as well as other products produced from agricultural products. Furthermore, downstream activities are said to be business activities that process primary agricultural products into processed products, either in the form of ready to cook or ready for use or ready to consume (ready to eat) along with their trading activities in domestic and international markets (Jenane et al., 2022; Singh et al., 2022).

Downstream activities in cashew farming in Central Buton District include processing and marketing activities. The two dimensions are translated into six indicators that measure downstream activities in cashew farming activities. Indicators in downstream activities are the availability of processing facilities, availability of raw material sources, cashew processing activities, availability of local packaging technology, cooperation with other business actors, and selling directly to intermediary traders. The downstream activities in cashew farming carried out by farmers in Central Buton Regency are presented in Table 2. Table 2 explains that in cashew farming activities, downstream activities carried out by farmers in Central Buton Regency are classified in the moderate category. These results reflect that most cashew farmers only sell the harvest directly without processing it into the final product. Whereas processing the harvest will be able to increase the amount of income received because the product has been processed and sold directly to end consumers. Downstream activities in cashew farming activities, which include processing and marketing, are still very limited to being carried out by farmers in Central Buton District. There are several factors that hinder the implementation of these activities, such as limited capital, limited market access (Mihyo et al., 2019), limited technology and knowledge (Nnahive et al., 2023), limited human resources, inadequate infrastructure, and focus on cultivation (Afful-Koomson et al., 2015). These factors directly or indirectly impact the ability of cashew farmers in Central Buton Regency to process the harvest. Thus, many farmers, who are the majority of smallholders without large capital strength, prefer to sell their crops directly to collectors. This is due to the inability of these farmers to carry out downstream activities.

***Cashew farming activities*:** Cashew farming activities are a series of activities carried out by cashew farmers or business actors in managing natural resources, especially land to produce agricultural products. This activity covers various stages starting from the provision of inputs, land processing to harvesting cashew crops (Lundy, 2021). The main objective of farming activities is to increase the productivity, quality, and profit of the agricultural products produced. Cashew farming activities will be seen from the type of variety, plant age, fertilization, pruning, labor use. The cashew farming activities are carried out by farmers of Central Buton Regency.

Table 2. Downstream activities in cashew farming activities.

No.	Indicator	Value	Category
1	Availability of processing facilities	3,69	Moderate
2	Availability of raw material sources	2,53	Moderate
3	Cashew processing activities	3,62	Moderate
4	Local availability of packaging technology	3,61	Moderate
5	Cooperating with other business actors	3,61	Moderate
6	Sell directly to intermediary traders	3,50	Moderate
Average		3,43	Moderate

Source: Processed Primary Data, 2024.

Table 3 shows that cashew farming activities carried out by farmers in Central Buton District are in the moderate category. This means that cashew farmers carrying out farming activities do not have adequate knowledge and skills in maintaining and increasing cashew crop production. This can be seen from the decreasing level of cashew production every year. Coupled with the age of the plant which is quite old (more than 20 years). In the case of agricultural activities, especially cashew farming in Indonesia, the increase in farming area is not followed by an increase in productivity. Thus, increasing the farming area is not the right action in increasing cashew production. In addition, the low productivity of cashew is partly due to the cultivation system that is still simple and the seeds are still random (Mohana et al., 2023), although efforts to increase productivity have been made through the assembly of varieties.

Table 3. Cashew farming activities.

No.	Indicator	Value	Category
1	Knowing the type of cashew varieties planted	4,25	High

2	Cashew plants are from local seedlings	3,48	Moderate
3	The types of varieties used are sourced from seedlings.	3,52	Moderate
4	Age of cashew cultivated has exceeded 20 years	4,42	High
5	Knowing the economic life of cashew plants	4,27	High
6	Knowing that plant age affects cashew production	3,40	Moderate
7	Fertilizer use intensity in cashew farming activities	3,41	Moderate
8	Knowing the use and benefits of fertilizers in cashew plants	3,65	Moderate
9	Cashew trees need pruning	3,60	Moderate
10	Knowing the benefits of pruning cashew plants	3,66	Moderate
11	Use of labor outside family members	2,87	Moderate
12	Use of labor sourced from family members	4,00	High
Average		3,71	Moderate

Source: Processed Primary Data, 2024.

***Effect of government policies and downstream activities on cashew farming activities*:** Data analysis with the Partial Least Squares Structural Equation Modeling (PLS-SEM) method, is a way to predict or refine existing theories (Garson, 2016). PLS-SEM analysis consists of the process of formulating theory, testing the Outer and Inner Model, and testing hypotheses (Hair et al., 2014). SmartPLS software version 3.0 was used in testing the influence of variables in the study.

***Formulation of research structural model theory*:** The research structural model formulated in this study includes exogenous (X) and endogenous (Y) variables. Exogenous variables include: (1) government policy (X1) consisting of 7 indicators (X1.1 - X1.7), (2) downstream activities (X2) consisting of 6 indicators (X2.1 - X2.6). While the endogenous variable is cashew farming activities (Y) which consists of 12 indicators (Y1 - Y12). The following is the formulation of the structural model in the study.

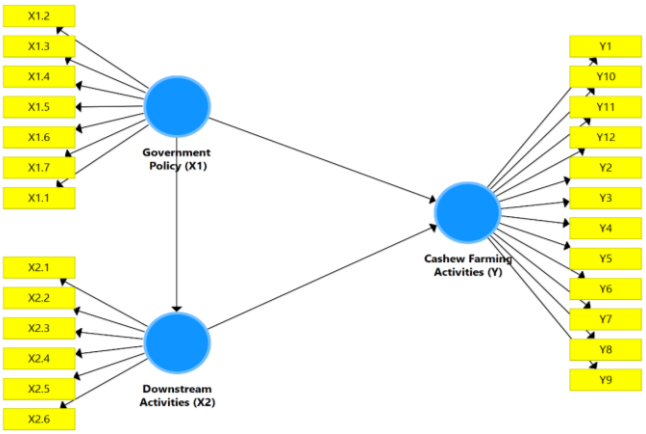

Figure 1. Initial research design.

***Measurement model analysis (outer model)*:**
The measurement model or outer model describes the relationship between each indicator block and its latent variable. The outer model serves to evaluate construct validity and reliability with parameters including convergent and discriminant validity, composite reliability, and crombach's alpha which are very important for the accuracy of the prediction model (Hair et al., 2019). In addition, Purwanto & Sudargini (2021), Combach's alpha and composite reliability serve to test the reliability of research data. The results of the outer model processing are depicted in Figure 2.

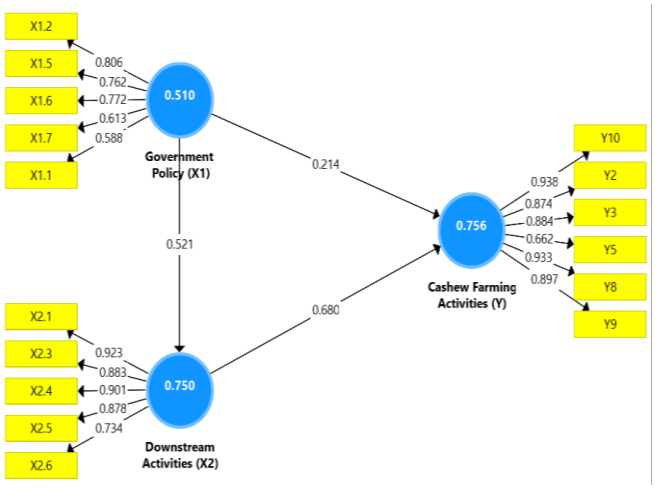

Figure 2. Outer model analysis output.

Figure 2 is obtained from processing results that eliminate indicators or research instruments that are considered invalid (outer loading value <0.5). In the government policy variable, there are two indicators identified as invalid, namely X1.3 (0.379) and X1.4 (0.417). For the downstream activities' variable, there is one indicator that is known to be invalid, namely X2.2 (0.-174). As for the cashew farming activities variable, there are six indicators identified as invalid, namely Y1 (0.430), Y4 (0.284), Y6 (0.178), Y7 (0.179), Y11 (0.144), and Y12 (0.-326). Outer loading values ranging from 0.50 to 0.60 are considered to have met the requirements for convergent validity values in early stage research on measurement model development (Chan & Idris, 2017).

In this study, the minimum standard set for the value of discriminant validity is 0.50. Then another parameter that is considered in testing discriminant validity is Average Variance Extracted (AVE). The AVE value set in this study is ≥ 0.5. There is high discriminant validity, if the correlation of indicators with latent variables exceeds the correlation with other variables (Cheah et al., 2018). Testing the reliability of the model using the composite reliability test which is reinforced by the Cronbach's alpha test. In PLS-SEM analysis, assessing the reliability of indicators on a variable is considered unreliable if the value of Cronbach's alpha <0.6.

Hair et al. (2014), the composite reliability coefficient should ideally have a value exceeding 0.7. The composite reliability value of 0.6 to 0.7 and the Cronbach's alpha value> 0.7 are considered good reliability in measuring the PLS-SEM model (Sarstedt et al., 2021).

Table 4. Outer model testing results.

Variables	Indicator	*Outer loading*	*Composite reliability*	*Cronbach Alpha*	AVE
Government Policy (X1)	X1.1	0,588	0,836	0,758	0,510
	X1.2	0,806			
	X1.5	0,762			
	X1.6	0,772			
	X1.7	0,613			
Downstream Activities (X2)	X2.1.	0,923	0,937	0,916	0,750
	X2.3	0,883			
	X2.4	0,901			
	X2.5	0,878			
	X2.6	0,734			
Cashew Farming Activities (Y)	Y2	0,874	0,949	0,933	0,756
	Y3	0,884			
	Y5	0,662			
	Y8	0,933			
	Y9	0,879			
	Y10	0,938			

Source: Processed Primary Data, 2024.

The results of the outer model analysis (Figure 2) show that all indicators or instruments in the study have met the required convergent validity, which has an outer loading value> 0.5, composite reliability value and Cronbach's alpha> 0.7, and average Variance Extracted (AVE) value ≥ 0.5.

***Structural model analysis (inner model)*:** The next stage of testing using SmartPLS analysis after the outer model test is testing the structural model (inner model). The output of the outer model analysis results aims to determine whether the variables have met the criteria for validity and reliability of data in quantitative research (Samani, 2016). The results of the inner model analysis are presented in the following figure.

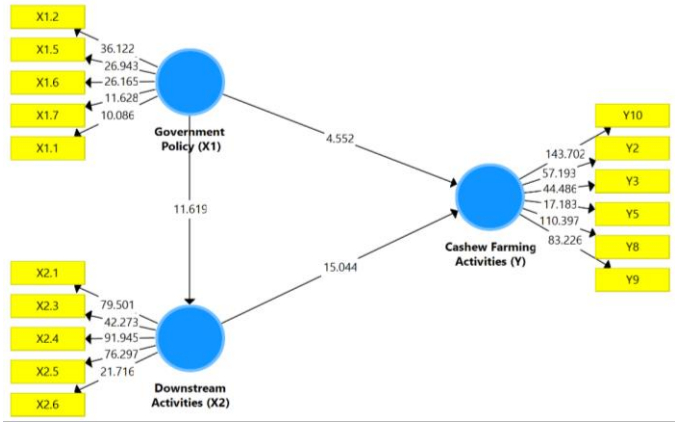

Figure 3. Inner model analysis output.

Inner model analysis has several outputs that can be seen as a reference in testing structural models. Inner model analysis includes path coefficients, R-Square (R^2), Goodness of Fit (GoF), and Q-Square / Predictive Relevance testing. Goodness of fit testing is carried out to determine the extent to which the model matches the data.

***Path coefficients*:** The path coefficient analysis aims to explain the direction of the resulting effect and the extent of the influence of the independent variable on the dependent variable (Wong, 2013). A positive path coefficient value explains the unidirectional influence between the independent variable and the dependent variable, while a negative value explains the opposite influence. The results of the path coefficient analysis are presented in Table 5.

Table 5. Coefficient path analysis output.

Construct	Cashew Farming Activities (Y)
Government Policy (X1)	0,214
Downstream Activities (X2)	0,680

Source: Processed Primary Data, 2024.

Table 5 shows the positive path coefficient value of each research variable. This result means that if the path coefficient value of the independent variable increases, it will have an impact on strengthening the relationship between exogenous and endogenous variables.

***R - Square*:** The determination test (R-Square) aims to measure the extent of the influence of each independent variable on the dependent variable (Ardi, 2020). A higher R-Square (R^2) value illustrates a more effective prediction model from the research conducted. In addition, the R-Square (R^2) value can be used to determine the effect (significant or not) between the variables in the study (Ozili, 2023). The R-Square (R^2) value is presented in Table 6.

Table 6. R-Square value.

Construct	R Square (R^2)	R^2 adjusted
Cashew Farming Activities (Y)	0,660	0,657
Downstream Activities (X2)	0,272	0,269

Source: Processed Primary Data, 2024.

Table 6 explains that the R-Square value for the downstream activities variable (X2) is 0.272 or classified in the weak category. This means that the downstream activities variable is influenced by government policy by 27.2%. The R-Square value for the cashew farming activities variable (Y) is 0.660 or classified as medium or moderate. This means that the cashew farming activities variable is influenced by the government policy and downstream activities variables by 66%. The R-Square value of 0.67 and above in the structural model is included in the strong category, while the R-Square value between 0.33 to 0.67 is moderate, and the R-Square value between 0.19 to 0.33 is weak (Hair et al., 2014).

***Goodness of Fit (GoF)*:** Goodness of Fit (GoF) is used to validate the overall research model, both the measurement model and the structural model. Goodness of Fit is a simple measurement for model prediction. The calculation of the Goodness of Fit (GoF) value will use the following formula.

$$GoF = \sqrt{\overline{AVE} x \overline{R^2}}$$
$$GoF = \sqrt{0{,}672\ x\ 0{,}466}$$
$$GoF = \sqrt{0{,}3132}$$
$$GoF = 0{,}560$$

The Goodness of Fit (GoF) value obtained from this research model is 0.560. This value is described as substantial Goodness of Fit, which means that the measurement model and structural model have been considered valid or feasible in predicting the theory developed in this study. The higher the GoF value obtained, the more accurate the representation of the formulated model. The Goodness of Fit value is categorized into 3 groups, namely the Goodness of Fit value of 0.1 to 0.25 means weak, the Goodness of Fit value of 0.26 to 0.36 means moderate, and the Goodness of Fit value ≥ 0.36 means strong (Samosir et al., 2023).

***Q-Square (Q^2)*:** In testing the predictive ability of the structural model (inner model), Q-Square (Q^2) or predictive relevance is used to assess the accuracy of the observed values obtained by the model and its parameter estimates. If the Q-Square value exceeds 0, then the model has predictive relevance. The Q-Square value can be calculated using the following formula.

Q-Square = 1 - [(1 - R1 2) (1 - R2 2)]
= 1 - [(1 - 0,660) (1 - 0,274)]
= 1 - [(0,34) (0,726)]
= 1 - (0,2468)
= 0.7532 or 0.75.

The resulting Q-Square (Q^2) or predictive relevance value is 0.75. This result means that the model formulated in this study has predictive relevance because the value obtained has exceeded 0. A higher Q-Square value indicates a good fit and goodness of fit of the structural model with the data (Sarstedt et al., 2021).

***Hypothesis testing*:** Hypothesis testing is done by examining the original sample estimate value (O), t-statistic (T), and P-value (P). Each of these interprets the direction of the relationship of the variables, and the significance of the relationship. An original sample value close to +1 indicates a positive relationship, while a value close to -1 indicates a negative relationship. A t-statistic value exceeding 1.96 or a P-value smaller than the significance level (<0.05) indicates a significant relationship between variables (Sarstedt et al., 2021).

Table 7 shows the results of hypothesis testing in this study. It is known that cashew farming activities are partially influenced by government policies with a T-Statistic value of 11.619 (P-Value 0.000), and downstream activities with a T-Statistic value of 15.044 (P-Value 0.000). Cashew farming activities are influenced by government policies through downstream activities with a T-Statistic value of 9.917 (P-Value 0.000). So, it can be concluded that all hypotheses in the study are valid because each influence formed has a T-Statistic value> 1.96 or a P-value <0.05.

***Effect of government policy on cashew farming activities*:** Government policy has a significant effect on cashew farming activities with a P-value of 0.000 (<0.05). Government policies play a crucial role in encouraging the development of cashew farming in Indonesia. One of the main policies is the superior seed subsidy program, which aims to increase crop productivity. However, implementation in the field is often uneven, especially in remote areas, making it difficult for many farmers to access quality cashew seeds. In addition, the program is often not accompanied by adequate technical training, so farmers lack understanding of optimal cashew cultivation techniques.

Many government policies have been made by the government, with the aim of opening market opportunities at national and global levels through the Ministry of Trade. To be able to access a larger market scale such as the global/international market, it is necessary to improve the quality of cashew products, so that they meet the requirements to be sold abroad. But for cashew farmers in Central Buton Regency who are currently classified as small farmers, this will be a big challenge to be able to access the international market. So, the role of the government is needed in supporting these cashew farmers to be able to improve the quality of their products to be equivalent to international standards. The support provided can be in the form of adequate infrastructure development, improving the quality of human resources through training and mentoring organized by the government. In addition, environmental and sustainability aspects such as organic farming and land conservation need to be emphasized

Table 7. Effect of independent variables on the bound variable.

Construct	Original sample (O)	Sample mean (M)	t-Statistics (|O/STDEV|)	P-values
Government Policy (X1) -> Downstream Activities (X2)	0,521	0,526	11,619	0,000
Government Policy (X1) -> Cashew Farming Activities (Y)	0,214	0,214	4,552	0,000
Downstream Activities (X2) -> Cashew Farming Activities (Y)	0,680	0,680	15,044	0,000
Government Policy (X1) -> Downstream Activities (X2) -> Cashew Farming Activities (Y)	0,354	0,357	9,917	0,000

Source: Processed Primary Data, 2024.

to maintain the sustainability of the cashew farming process in the long term and sustainably.

Government policies have a significant impact on cashew farming, but their effectiveness is still hampered by uneven implementation, lack of coordination between agencies, and lack of technical assistance for farmers (Wittern et al., 2023; Tessmann, 2018). By maximizing government policies related to infrastructure and human resources and sustainable agricultural practices that pay attention to environmental aspects. Thus, government policies can more effectively support cashew farmers and increase the sector's contribution to the national economy (Esakkimuthu & Anitha, 2024).

***Influence of downstream activities on cashew farming activities*:** Downstream activities have a significant effect on cashew farming activities with a P-value of 0.000 (<0.05). Downstream activities in the cashew value chain have a significant influence on farming activities. Downstream activities, such as processing cashew kernels into products ready for consumption or export, as well as utilizing cashew shells for derivative industries, are the main determinants of added value and competitiveness of this commodity. Currently, the cashew processing industry in Indonesia is still limited, with most of the production exported in raw or semi-finished form. This results in farmers only earning a small profit margin, as the selling price of raw cashew kernels tends to be low. In addition, the lack of modern processing technology at the farmer or cooperative level leads to high levels of post-harvest losses and reduced production quality. On the other hand, the utilization of cashew shells, which actually have high economic potential as raw materials for industries such as biofuels, lubricants, and paints, is still not optimal.

Lack of investment in the downstream sector and lack of knowledge on processing technology are the main constraints (Dimonso et al., 2024). This condition is exacerbated by the lack of coordination between farmers, industry players, and the government in developing an integrated value chain. As a result, farmers tend to focus on production without paying attention to processing and marketing aspects, which can actually increase their income. Increased investment in this sector includes the construction of processing facilities and training in environmentally friendly processing technology for farmers and small businesses. The existence of a guaranteed price that is fixed and profitable for cashew farmers will provide an opportunity to increase production plus the cooperation of farmers and processing industries will provide a guarantee of sustainability for cashew farming in the future. By strengthening downstream activities, it is expected that the added value of cashew can increase, which in turn will boost farmers' welfare and regional economic growth (Chu & Pham, 2024).

***Effect of government policy through downstream activities on cashew farming activities*:** Government policies and downstream activities have a significant and joint effect on cashew farming activities with a P-value of 0.000 (<0.05). Government policies and downstream activities have a significant influence on cashew farming activities in Indonesia. Currently, cashew farming is faced with various challenges, such as price fluctuations, limited market access, and low value-added products. Government policies, such as fiscal incentives, technical assistance, and infrastructure development programs, can play a crucial role in improving farm productivity and sustainability. For example, policies that support the development of agricultural technologies, such as improved seeds and more efficient cultivation methods, can increase yields and cashew seed quality. In addition, training programs for farmers on good agricultural practices (GAP) can help reduce the risk of crop failure and increase farmers' income (Zakaria et al., 2020).

On the downstream side, cashew processing and marketing activities determine the economic value received by farmers. Mani & Yudha (2021), explained that currently, most of Indonesia's cashew seeds are still exported in raw form, so the added value obtained is relatively low. Increased capital investment for farmers in the downstream sector, such as processing cashew seeds into high-value products, can increase farmers' income and welfare.

Government policies that encourage the formation of cooperatives or farmer groups can also strengthen farmers' bargaining position in the market. With cooperatives, farmers can access a wider market, obtain better prices, and reduce dependence on middlemen (Abebe et al., 2016). However, another challenge that needs to be addressed is the lack of coordination between the upstream and downstream sectors, as well as limited access to market information. The government can facilitate the establishment of an integrated market information platform, so that farmers can obtain real-time price and demand information. Thus, comprehensive government policies and synergy between upstream and downstream sectors (Agyemang et al., 2022), can create a more sustainable and profitable cashew farming ecosystem for farmers.

***Conclusion*:** Partially, cashew farming activities are positively and significantly influenced by government policies by 21.4%, and downstream activities (processing and marketing) by 68%. Then cashew farming activities are influenced by government policies through downstream activities by 0.660 or 66%. Increasing government policy support and updating the handling of downstream activities will have a positive and significant impact on cashew farming activities. Government policies and downstream activities are important factors in improving cashew farming activities in Central Buton Regency.

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***SDGs addressed*:** No Poverty, Zero Hunger, Decent Work and Economic Growth.

***Policy referred*:** Agricultural Development and Agribusiness Policy; Government Policy Support for Cashew Farming; Policy Significance in the Study's Context.

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REFERENCES

Abebe, G. K., Bijman, J., & Royer, A. (2016). Are middlemen facilitators or barriers to improving smallholders' welfare in rural economies? Empirical evidence from Ethiopia. *Journal of Rural Studies, 43*, 203-213.

Afful-Koomson, T., Fonta, W., Frimpong, S., & Amoh, N. (2015). *Economic and financial analyses of small and medium food crops agro-processing firms in Ghana*. United Nations University Institute for Natural Resource.

Agyemang, M., Kusi-Sarpong, S., Agyemang, J., Jia, F., & Adzanyo, M. (2022). Determining and evaluating socially sustainable supply chain criteria in agri-sector of developing countries: Insights from West Africa cashew industry. *Production Planning & Control, 33*, 1115-1133.

Ardi, N. (2020). Structural equation modeling-partial least square to determine the correlation of factors affecting poverty in Indonesian provinces. *IOP Conference Series: Materials Science and Engineering, 846*, 012054.

Aulia, T. R., Tasri, N., & Ali, S. W. (2023). Priority of agricultural sub-sector development increasing economic growth in Sidenreng Rappang Regency. *IECON: International Economics and Business Conference, 1*, 387-393.

Bassett, T. J., Koné, M., & Pavlovic, N. R. (2018). Power relations and upgrading in the cashew value chain of Côte d'Ivoire. *Development and Change, 49*, 1223-1247.

Beckman, J., & Countryman, A. M. (2021). The importance of agriculture in the economy: Impacts from COVID-19. *American Journal of Agricultural Economics, 103*, 1595-1611.

Bello, D. O., Ahoton, L. E., Saidu, A., Akponikpè, I. P. B., Ezin, V. A., Balogoun, I., & Aho, N. (2017). Climate change and cashew (Anacardium occidentale L.) productivity in Benin (West Africa): Perceptions and endogenous measures of adaptation. *International Journal of Biological and Chemical Sciences, 11*, 924-946.

Benitez, J., Henseler, J., Castillo, A., & Schuberth, F. (2020). How to perform and report an impactful analysis using partial least squares: Guidelines for confirmatory and explanatory IS research. *Information & Management, 57*, 103168.

Boer, D., Ladati, N., Arsyad, M. A., & Larekeng, S. H. (2021). Morphological diversity and relationship among cashew (Anacardium occidentale L.) individuals in three districts of Southeast Sulawesi, Indonesia. *IOP Conference Series: Earth and Environmental Science, 886*, 012056.

Buitenhuis, Y., Candel, J. J., Termeer, K. J., & Feindt, P. H. (2020). Does the Common Agricultural Policy enhance farming systems' resilience? Applying the Resilience Assessment Tool (ResAT) to a farming system case study in the Netherlands. *Journal of Rural Studies, 80*, 314-327.

Central Bureau of Statistics of Southeast Sulawesi. (2021). *Southeast Sulawesi in Figures 2021*. Kendari: Central Bureau of Statistics.

Chan, L. L., & Idris, N. (2017). Validity and reliability of the instrument using exploratory factor analysis and Cronbach's alpha. *International Journal of Academic Research in Business and Social Sciences, 7*, 400-410.

Cheah, J. H., Sarstedt, M., Ringle, C. M., Ramayah, T., & Ting, H. (2018). Convergent validity assessment of formatively measured constructs in PLS-SEM: On using single-item versus multi-item measures in redundancy analyses. *International Journal of Contemporary Hospitality Management, 30*, 3192-3210.

Chu, T. T., & Pham, T. T. T. (2024). Vertical coordination in agri-food supply chain and blockchain: A proposed framework solution for Vietnamese cashew nut business. *Regional Science Policy & Practice, 16*, 12576.

Cole, M. B., Augustin, M. A., Robertson, M. J., & Manners, J. M. (2018). The science of food security. *NPJ Science of Food, 2*, 14.

Dimoso, N., Kassim, N., & Makule, E. (2024). Cashew apple in Tanzania: Status of utilization, challenges, and opportunities for sustainable development. *F1000Research, 11*, 1354.

Esakkimuthu, M., & Anitha, G. (2024). Assessing key constraints in cashew production: Insights from Kerala and Tamil Nadu, India. *Advances in Research on Teaching, 25*, 362-372.

Fuglie, K. (2015). Accounting for growth in global agriculture. *Bio-Based and Applied Economics, 4*, 201-234.

Garson, G. D. (2016). *Partial Least Squares (PLS-SEM): Regression & Structural Equation Models*. School of Public & International Affairs, North Carolina State University.

Hair, J. J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM). *European Business Review, 26*, 106-121.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*, 2-24.

Jenane, C., Ulimwengu, J. M., & Tadesse, G. (2022). Annual trends and outlook report: Agrifood processing strategies for successful food systems transformation in Africa. ReSAKSS & IFPRI.

Khan, W., Jamshed, M., & Fatima, S. (2020). Contribution of agriculture in economic growth: A case study of West Bengal (India). *Journal of Public Affairs, 20*, 2031.

Lundy, B. D. (2021). *Cashews in conflict: Political ecology of industrial crops*. Routledge.

Lyson, T. A. (2004). *Civic agriculture: Reconnecting farm, food, and community*. UPNE.

Mani, S. A., & Yudha, E. P. (2021). The competitiveness of Indonesian cashew nuts in the global market. *JEJAK: Journal of Economics and Policy, 14*, 93-101.

Mihyo, P., Mihyo, Z., Msami, S., Kivuyo, M., & Rukonge, A. (2019). Gender and social inclusion in the cashew nut value chain: The role of women and youth in agro-processing in Tanzania. *Eastern Africa Social Science Research Review, 35*, 29-64.

Mohana, G. S., Eradasappa, E., Vanitha, & Nayak, M. G. (2023). Cashew genetic resources: A global perspective. In *Fruit and Nut Crops* (pp. 1-39). Singapore: Springer Nature.

Monteiro, F., Catarino, L., Batista, D., Indjai, B., Duarte, M. C., & Romeiras, M. M. (2017). Cashew as a high agricultural commodity in West Africa: Insights towards sustainable production in Guinea-Bissau. *Sustainability, 9*, 1666.

Movilla-Pateiro, L., Mahou-Lago, X. M., Doval, M. I., & Simal-Gandara, J. (2021). Toward a sustainable metric and indicators for sustainability in agricultural and food production. *Critical Reviews in Food Science and Nutrition, 61*, 1108-1129.

Nalbandian, J. (2015). Facilitating community, enabling democracy: New roles for local government managers. In *The Age of Direct Citizen Participation* (pp. 49-62). Routledge.

Nisa, A. F., & Ridho, A. F. (2024). Economic linkage between rubber plantation and other sectors in Indonesia. *SEAS (Sustainable Environment Agricultural Science), 8*, 69-78.

Nnahiwe, P., Hejkrlík, J., & Bavorová, M. (2023). Adopting modern agricultural technologies and impact on economic performance: Evidence from cashew farmers in Kenya. *International Food and Agribusiness Management Review, 26*, 615-639.

Olubode, O. O., Joseph-Adekunle, T. T., Hammed, L. A., & Olaiya, A. O. (2018). Evaluation of production practices and yield enhancing techniques on productivity of cashew (Anacardium occidentale L.). *Fruits, 73*, 75-100.

Olukunle, O. T. (2022). Determinants of cashew supplies and prospects for diversification into agro-allied industries in Nigeria. *International Journal of Agricultural Policy and Research, 11*, 35-45.

Oluyole, K. A., Agbeniyi, S. O., & Ayegbonyin, K. O. (2017). Competitiveness of cashew production in Nigeria. *International Journal of Research in Agriculture and Forestry, 4*, 1-7.

Ozili, P. K. (2023). The acceptable R-square in empirical modeling for social science research. In *Social Research Methodology and Publishing Results: A Guide for Non-Native English Speakers* (pp. 134-143). IGI Global.

Purwanto, A., & Sudargini, Y. (2021). Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis for social and management research: A literature review. *Journal of Industrial Engineering & Management Research, 2*, 124-130.

Quick, K. S., & Bryson, J. M. (2022). Public participation. In *Handbook on Theories of Governance* (pp. 158-168). Edward Elgar Publishing.

Rose, J. M., Borriello, A., & Pellegrini, A. (2023). Formative versus reflective attitude measures: Extending the hybrid choice model. *Journal of Choice Modeling, 48*, 100412.

Samani, S. A. (2016). Steps in research process (Partial Least Square of Structural Equation Modeling). *International Journal of Social Science and Business, 1*, 55-66.

Samosir, J., Purba, O. R., Ricardianto, P., Dinda, M., Rafi, S., Sinta, A. K., Wardhana, A., Anggara, D. C., Trisanto, F., & Endri, E. (2023). The role of social media marketing and brand equity on e-WOM: Evidence from Indonesia. *International Journal of Data and Network Science, 7*, 609-626.

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial Least Squares Structural Equation Modeling. In *Handbook of Market Research* (pp. 1-47). Springer International Publishing.

Sexton, R. J., & Xia, T. (2018). Increasing concentration in the agricultural supply chain: Implications for market power and sector performance. *Annual Review of Resource Economics, 10*, 229-251.

Singh, P. K., Mohanty, P., Mishra, S., & Adhya, T. K. (2022). Food waste valorization for biogas-based bioenergy production in circular bioeconomy: Opportunities, challenges, and future developments. *Frontiers in Energy Research, 10*, 903775.

Tessmann, J. (2018). Governance and upgrading in south-south value chains: Evidence from the cashew industries in India and Ivory Coast. *Global Networks, 18*, 264-284.

Tola, J., & Mazengia, Y. (2019). Cashew production benefits and opportunities in Ethiopia: A review. *Journal of Agricultural and Crop Research, 7*, 18-25.

Van der Ploeg, J. D. (2019). *Labor, markets, and agricultural production*. CRC Press.

Vehovar, V., Toepoel, V., & Steinmetz, S. (2016). Non-probability sampling. In *The Sage Handbook of Survey Methods* (Vol. 1, pp. 329-345).

Wang, F. H. (2019). On the relationships between behaviors and achievement in technology-mediated flipped classrooms: A two-phase online behavioral PLS-SEM model. *Computers & Education, 142*, 103653.

Wittern, J., Luckmann, J., & Grethe, H. (2023). Cashew processing in Ghana—A case for infant industry support? *Food Policy, 119*, 102448.

Wong, K. K. K. (2013). Partial Least Squares Structural Equation Modeling (PLS-SEM) techniques using SmartPLS. *Marketing Bulletin, 24*, 1-32.

Xuezhen, W., Shilei, W., & Feng, G. (2010). The relationship between economic growth and agricultural growth: The case of China. *2010 International Conference on E-Business and E-Government*, 5315. IEEE.

Zakaria, A., Azumah, S. B., Appiah-Twumasi, M., & Dagunga, G. (2020). Adoption of climate-smart agricultural practices among farm households in Ghana: The role of farmer participation in training programs. *Technology in Society, 63*, 101338.

Zarliani, W. O. A., Wardana, W., & Amiruddin, A. (2021). The behavior and performance of cashew market in South Buton Regency, Indonesia. *Caraka Tani: Journal of Sustainable Agriculture, 36*, 20-32.